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TITLE: Intermittent drive transmission clutch

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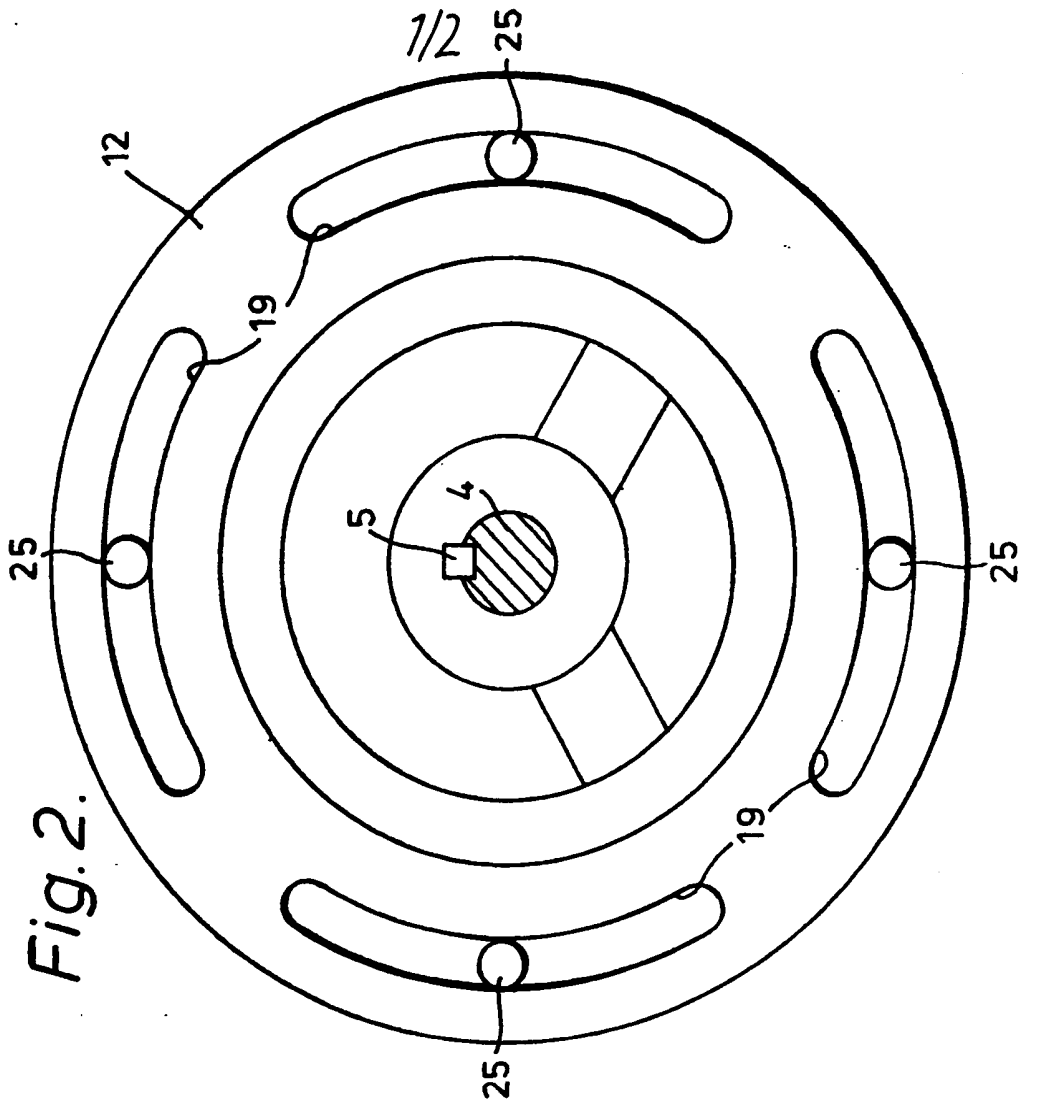
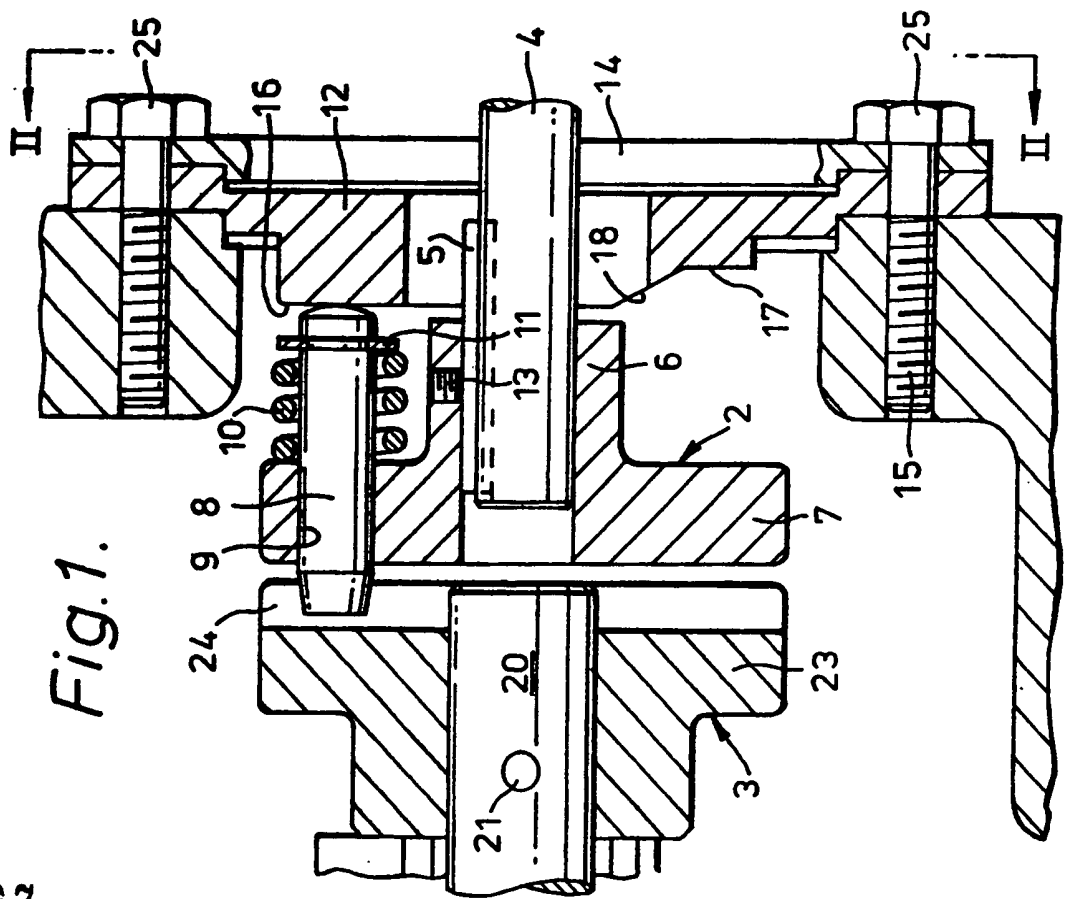
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ABSTRACT:

An intermittent transmission drive includes a driving shaft 4 carrying a plunger 8 which is operated by a stationary cam 12 against the bias of a spring 10 to move it axially into or out of driving engagement with an abutment 24 intermittently transmitting drive thereto. The cam may consist of at least two arcuate portions capable of arcuate adjustment in position relative to each other so as to vary the period of clutch engagement. <IMAGE>

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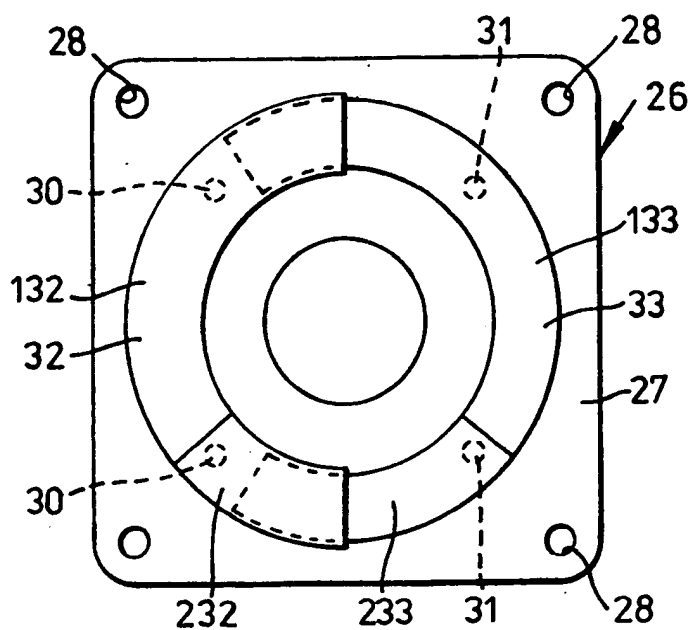


Fig. 3.

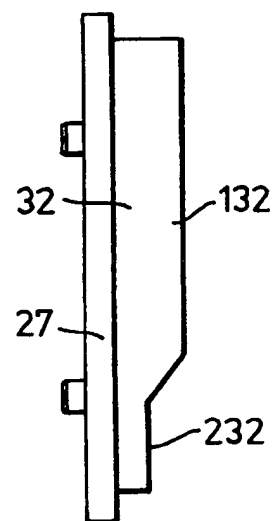


Fig. 4.

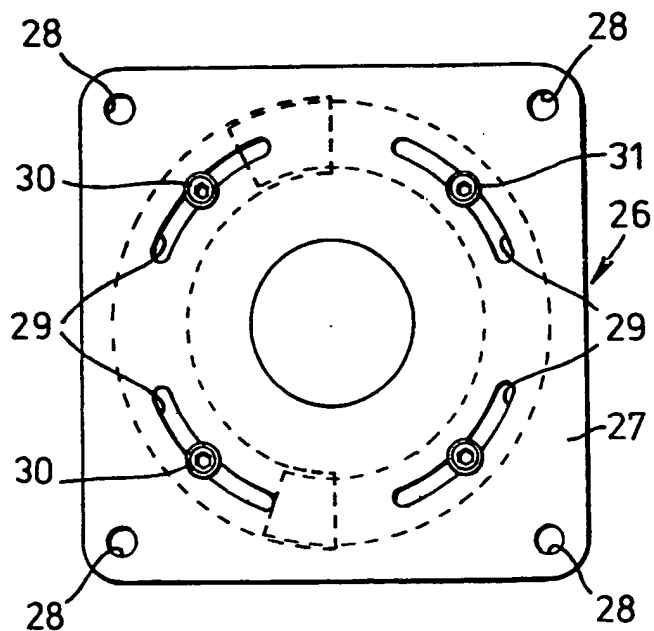


Fig. 5.

## SPECIFICATION

### Intermittent drive transmission systems

5 The present invention relates to intermittent drive transmission systems. There are many applications in which drive is required for interrupted periods of regular sequence.

One such application occurs in bindery equipment where a tape drive mechanism advances a signature to a guillotine station at which point the tape drive is interrupted while guillotining is effected and the drive recommenced when the knives of the guillotine have cleared the signature and it is desired to move the signature to the next work station. Another application is to the drive of an ink fountain roller whereby ink can be fed from the fountain for a predetermined degree of rotation of the roller irrespective of the speed of rotation of drive imparted to the roller.

An object of the present invention is to provide a simple reliable and relatively inexpensive intermittent power drive transmission system.

The invention also includes means whereby the drive period or the dwell in any one, complete rotation of the drive shaft can be modified.

According to the present invention an intermittent drive transmission system includes a two part coupling, one part driving and the other part driven, a plunger carried by one part and axially resiliently urged in one direction, a cam track carried by one part and a projection secured to or integrally formed with one of the parts wherein the plunger directly or indirectly is resiliently urged against the cam face which is so profiled that in any one rotation of the driving part it will present at least one dwell portion to the plunger whereby the plunger engages or disengages the projection so that when engaged, the plunger imparts drive from one part of the coupling to the other.

In the examples of the invention shown in the accompanying drawings:

*Figure 1* is a cross section of one form of drive,

*Figure 2* is a view on II - II, *Figure 1* with the front plate removed

*Figure 3* is a front view of a modified form of plate,

*Figure 4* is a side view on IV - IV, *Figure 3* and

*Figure 5* is a rear view of the plate shown in *Figure 3*.

Referring to *Figures 1* and *2* a coupling includes a driving part generally designated 2 and a driven part, generally designated 3. The driving part 2 includes a driving shaft 4 to which is keyed, by key 5 a flanged boss, held in place by a grub screw 13. The flange 7 carries a plunger 8; this plunger passes through a bore 9 in the flange and is axially resiliently urged to the right in *Figure 1* by a helical spring 10 which bears at one end against the flange and at the other end against a circlip 11 which encircles and engages in a circumferential groove in the plunger 8.

The plunger is resiliently urged against a cam 12 which is held in place by a front plate 14, bolted by

and a low level or dwell portion 17 joined by ramps 18.

To adjust the cam circumferentially, the screws 25 are loosened so that the cam can be arcuately moved within the limits of the slots 19, *Figure 2* and the screws retightened.

The driven part 3 includes a driven shaft 20 to which is pinned, by pin 21, a flanged boss 22. The flange 23 of the flanged boss 22 has secured or integrally formed therewith a spline or projection 24 which extends radially of the face of the flange.

In operation, as the drive shaft 4 rotates, it rotates the flanged boss 6 so that the plunger 8, which is resiliently urged against the face of the cam 12 and follows its contours. As the flanged boss 6 rotates, so the plunger 8 reciprocates axially as it runs up and down from high to the low level of the cam face.

The plunger, when pushed axially forward - to the left in *Figure 1* - by the high level 16 of the cam engages the spline 24 and imparts drive to the driven part 3.

The degree of rotation of the driven part 3 in relation to one complete revolution of the drive part 2 is dependent on the arcuate length of the low or dwell portion of the cam, during the passage over which by the plunger, the drive to the driven part is interrupted.

It if is desired to modify the ratio of drive to dwell, or non-drive time, the cam plate 12 can be changed for one of different arcuate lengths of high and low track or the arrangement shown in *Figures 3, 4, and 5* may be employed.

Referring to these figures, the cam, generally designated 26 comprises a back plate 27 provided with holes 28 for the retaining screws 25 and arcuate slots 29 through which pass screws 30, 31 respectively securing two cam sections 32, 33 to the back plate.

The cam sections 32, 33 are telescopic, that is, the cam 32 is of inverted flat bottomed U - section, within which section can slide the ends of the cam section 33.

Both cam sections have a high section track 132 and 133 and a low section track 232 and 233.

When it is desired to adjust the period of drive imparted by the plunger 8 screws 30, 31 are loosened and the cam sections moved arcuately within the confines of the slots 29.

By adjusting the relationship between the two cam sections the ratio of high cam profile to low cam profile can be selected and the screws 30, 31 tightened once the adjustment has been made.

### CLAIMS (filed 11.1.82)

1. An intermittent drive transmission system including a two part coupling, one part driving and the other driven, at least one plunger carried by one part and axially resiliently urged in one direction, a stationary cam track and a projection secured to or integrally formed with one of the parts wherein a plunger directly or indirectly is resiliently urged

plunger imparts drive from one part of the coupling to the other.

2. An intermittent drive transmission system according to claim 1 wherein the (or each) plunger is carried by the driving part, one end of which plunger is resiliently urged into contact with the cam face of a cam track secured to a stationary part of the system.

3. An intermittent drive transmission system according to claim 1 or 2 wherein the cam track profile includes at least one high section track, the length of which can be adjusted, thereby to vary the period of drive transmitted to the driven member.

4. An intermittent drive transmission system according to claim 1 or 2 or 3 wherein the cam track includes at least two arcuate portions capable of arcuate movement relative to each other and securement means for locking the portions after adjustment.

5. An intermittent drive transmission system constructed and capable of operation substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

6. An intermittent drive transmission system constructed and capable of operation substantially as hereinbefore described and including the cam track substantially as hereinbefore described with reference to Figures 3, 4 and 5 of the accompanying drawings.